



Development Solutions

ICE™-5100 Emulator Installation Supplement

ICE™-5100 Emulator Installation Supplement

Notational Conventions

The following notational conventions are used throughout this manual.

<i>italics</i>	indicate variable expressions. Substitute a value or symbol.
<CNTL>	denotes the host keyboard's control key. For example, <CNTL>C means enter C while pressing the control key.
<i>device</i>	stands for the number or letter of a disk drive.
<i>dirname</i>	stands for any user-created directory.
<i>filename</i>	is a valid file name.
<i>pathname</i>	specifies a path to a file. It can include <i>device</i> , <i>dirname</i> , and <i>filename</i> .
shading	indicates user input.
<i>nnn</i>	refers to the number of your user probe. In commands where you must specify the number, replace <i>nnn</i> with your user probe number. For example, assuming you have an ICE-5100/252 user probe, replace <i>nnn</i> with 252 as shown in the following software invocation command:

ICE*nnn*

Replace *nnn* as follows:

ICE252

ICE™-5100 EMULATOR INSTALLATION SUPPLEMENT

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This manual describes how to connect the ICETM-5100 emulator components together and to the following hosts:

- IBM PC AT and PC XT
- Series IV
- Series III

The manual is divided into the following chapters:

Chapter 1	describes the hardware installation procedures.
Chapter 2	describes the software installation procedures for the IBM PC AT and PC XT computer systems.
Chapter 3	describes the software installation procedures for the Series IV development system.
Chapter 4	describes the software installation procedures for the Series III development system.
Appendix A	describes configuring the IBM PC AT or PC XT as a host for the ICE-5100 emulator.
Appendix B	describes configuring the Series IV as a host for the ICE-5100 emulator.
Appendix C	describes configuring the Series III as a host for the ICE-5100 emulator.

1

HARDWARE INSTALLATION



1.1 Introduction

This chapter describes hardware installation procedures. It is divided into the following sections:

- Section 1.2 Connecting the Emulator Components Together
- Section 1.3 Using the Emulator in Stand-alone Mode
- Section 1.4 Running the Customer Confidence Tests
- Section 1.5 Connecting the Emulator to a Target System
- Section 1.6 Changing Target Adaptors
- Section 1.7 Installing the Emulation Clips Assembly
- Section 1.8 Connecting Test Equipment to the Emulator
- Section 1.9 Changing the Protection Fuse

1.2 Connecting the Emulator Components Together

CAUTION

The processor module's emulation processor can be damaged by static electricity. Be sure to follow proper electrostatic discharge handling procedures.

Refer to Figure 1-1 to identify the hardware components of the ICE-5100 emulator. A small flat-blade screwdriver is the only tool required to connect the emulator components together.

The installation procedures assume the host is properly configured and its power is OFF (refer to the appropriate appendix in this manual for instructions on configuring your host).

Perform the following steps to connect the emulator components together.

1. Verify that the emulator's power supply switch is in the OFF position and that the voltage selector switches on the back of the power supply are properly configured for your area (refer to Figure 1-2).
2. Plug the DC power cable into the nine-pin connector on the front of the power supply. Plug the other end of the cable into the back of the controller pod as shown in Figure 1-3. Tighten the retaining screws.
3. Plug the AC power cable into the back of the power supply. Plug the other end of the cable into a power outlet.

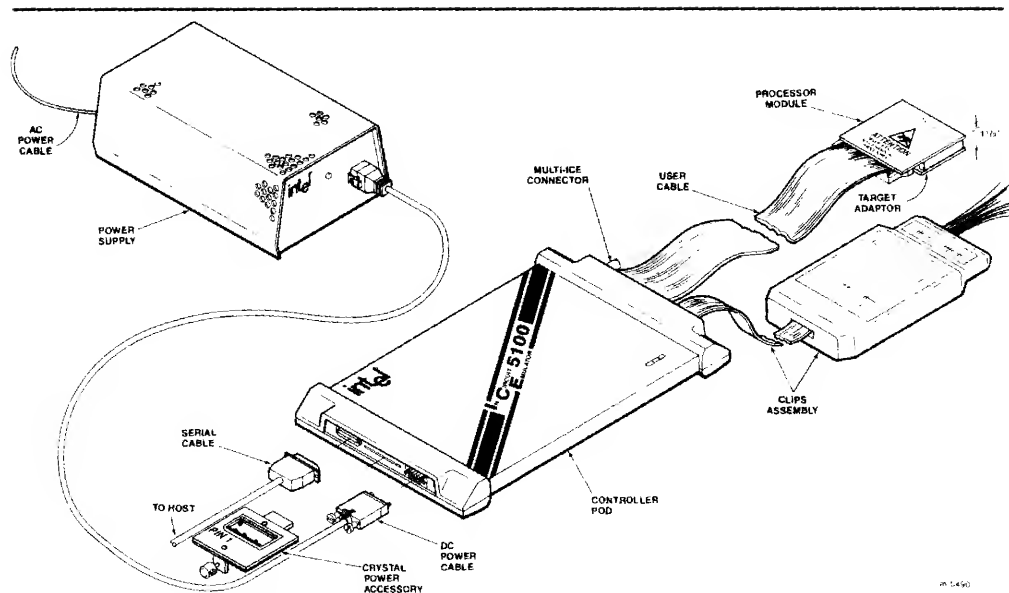


Figure 1-1 The ICE™-5100 Emulator Hardware

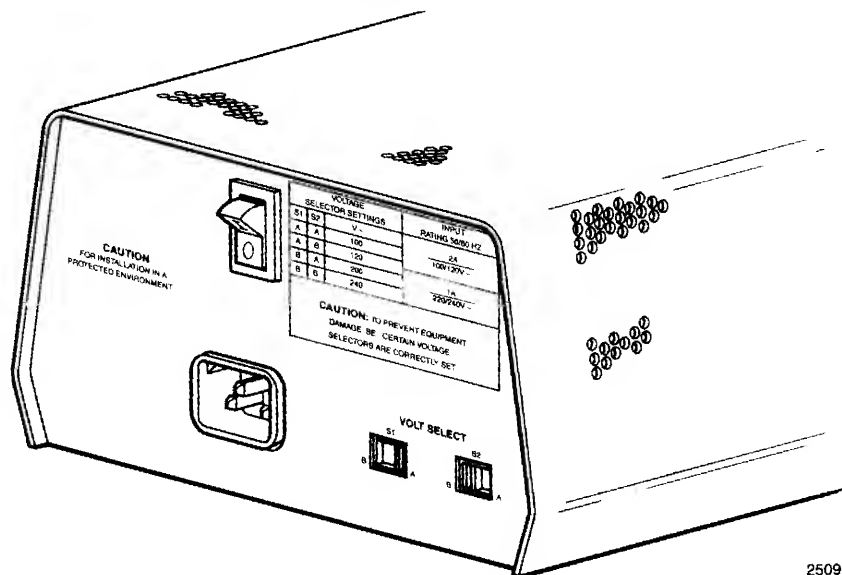


Figure 1-2 The ICE™-5100 Emulator's Power Supply Back Panel

4. Plug the nine-prong male end of the serial cable into the serial connector on the back of the controller pod (refer to Figure 1-3). Tighten the retaining screws.

Connect the other end of the serial cable to one of the following host serial channels:

- Series III - Serial channel 1
- Series IV - Serial channel 2
- IBM PC AT and PC XT - Serial channel COM1 or COM2

Tighten the retaining screws.

5. Connect the target adaptor to the bottom of the processor module as shown in Figure 1-4. The two iSBX™ connectors on the processor module are keyed to prevent improper installation of the target adaptor.

Press firmly on the target adaptor until all four corners of the target adaptor are locked to the processor module.

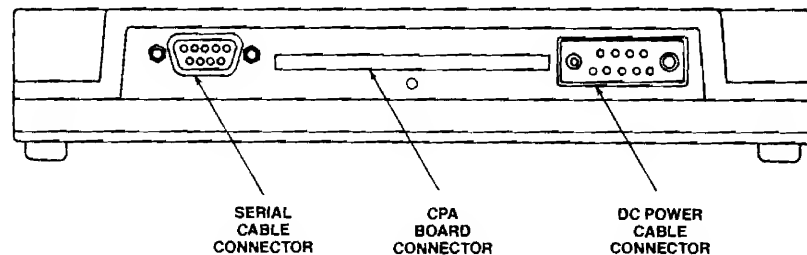
6. Plug the user cable into the controller pod as shown in Figure 1-5. The user cable is keyed to prevent improper installation.

1.3 Using the Emulator in Stand-alone Mode

The crystal power accessory (CPA) is used when running the emulator in the stand-alone mode and when running the customer confidence tests.

Perform the following steps to install the CPA.

1. Ensure that the ICE-5100 emulator's power supply is OFF.
2. Ensure that the CPA board you are installing is compatible with your target adaptor.
3. Insert the CPA board in the connector on the back of the controller pod as shown in Figure 1-6. Turn the thumbscrew clockwise to lock the CPA into the controller pod.
4. Ensure that the user cable is connected to the controller pod as shown in Figure 1-5.



2508

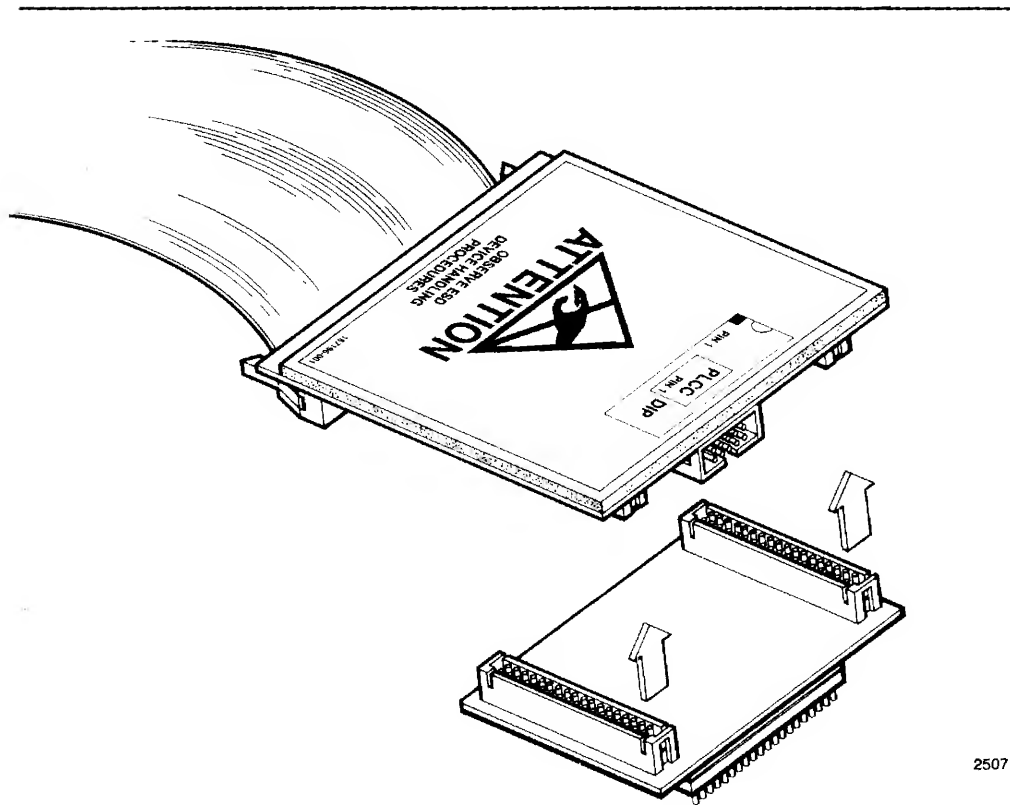
Figure 1-3 The ICE™-5100 Emulator's Controller Pod Back Panel

5. Loop the user probe assembly over the controller pod as shown in Figure 1-7. Align pin 1 of the target adaptor to pin 1 of the socket on the CPA board.

Apply gentle, even pressure to seat the adaptor in the socket on the CPA board.

6. Turn the emulator's power supply on. Observe the LED indicators on the top of the controller pod. At power-up, the green LED will flash on in approximately $\frac{1}{2}$ second. If it fails to come on, the control processor has discovered a hardware failure. (Refer to the inside back cover for service information.)

The red LED remains on while power is on.



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Figure 1-4 Connecting the Target Adaptor to the Processor Module

1.4 Running the Customer Confidence Tests

This section contains an abbreviated summary on running the customer confidence tests. Because the confidence tests are user probe specific, only a brief description on running the tests is presented here. Refer to your user probe supplement for more information on running or obtaining a list of the confidence tests.

NOTE

Ensure that the emulator is configured for stand-alone operation as described in Section 1.3 of this chapter before invoking the confidence tests.

To run the confidence tests, perform the following steps.

1. Apply power to the host and ICE-5100 emulator.
2. Boot the host operating system.

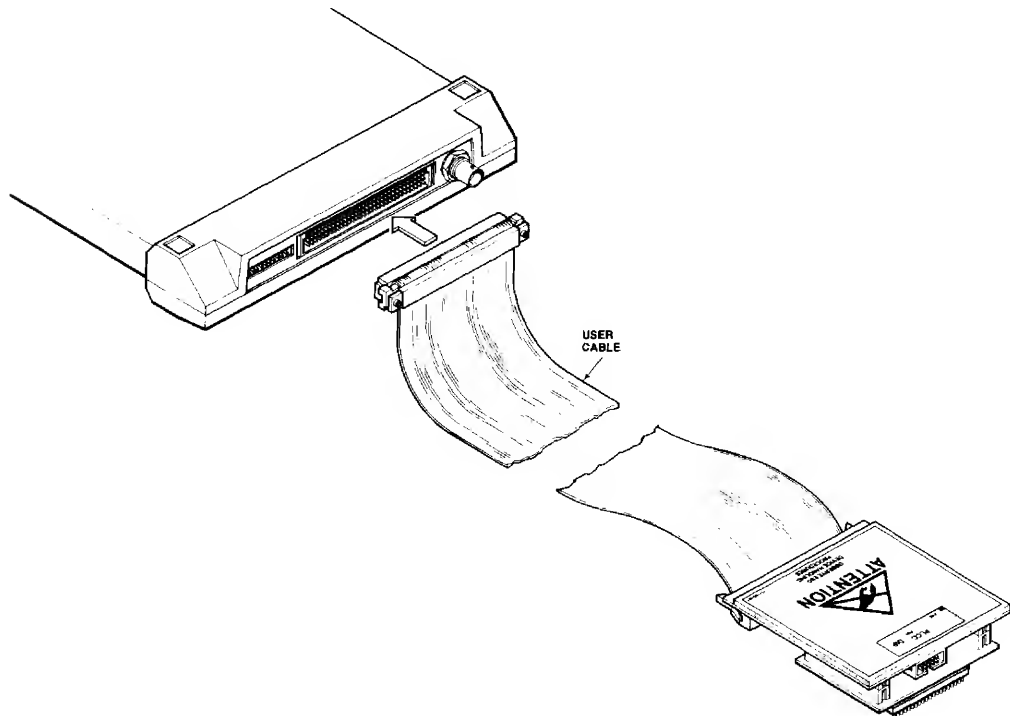
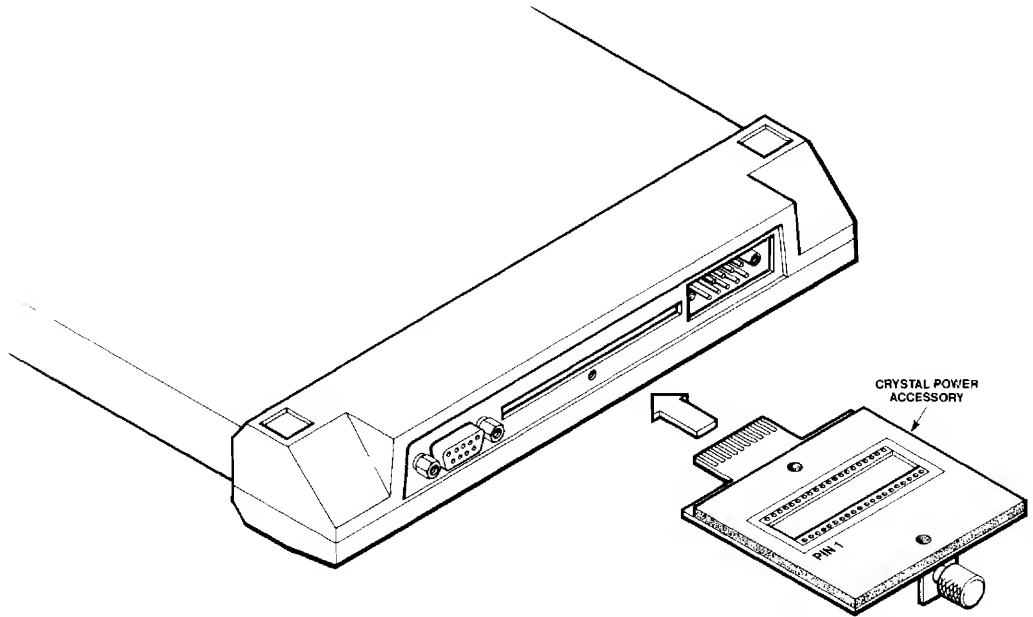


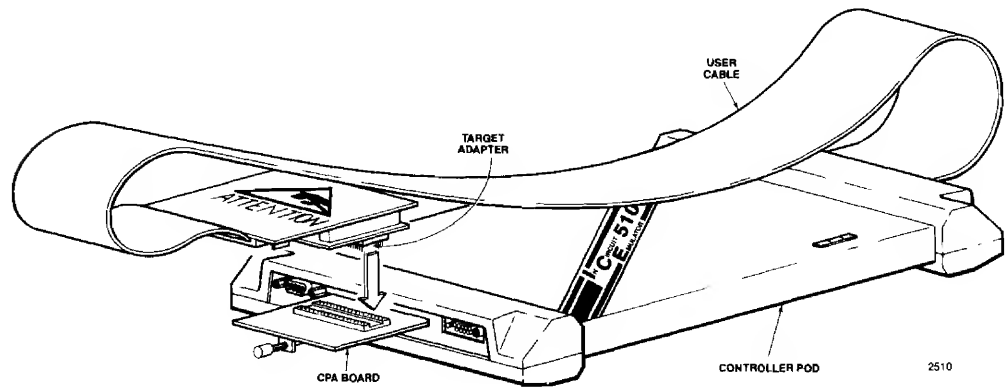
Figure 1-5 Connecting the User Cable to the Controller Pod

2505



2504

Figure 1-6 Connecting the CPA to the Controller Pod



2510

Figure 1-7 Configuration for Stand-alone Operation

3. Insert the disk labeled *ICTnnn* ICE-5100/*nnn* Confidence Tests into an available floppy disk drive. Be sure you have the right disk for your host.
4. Enter the following command to invoke the Confidence Test software (replace *nnn* with the number of your user probe (e.g., 252 for the ICE-5100/252 user probe). NOTE: Series III hosts require RUN to be entered before the command.

[RUN] *pathnameICTnnn*

After the confidence test software loads, the following display appears on the screen:

```
host-name ICE-5100/nnn Customer Confidence Test Vx.y  
Copyright 1986 Intel Corporation  
{
```

5. To start the confidence tests, enter

{TEST

The confidence tests take approximately four minutes to complete. If all tests pass, the prompt (}) reappears on the screen. At this point, you are ready to exit the confidence test software.

CAUTION

Do not remove the confidence test disk while testing is in progress.

6. Obtain a summary of the confidence test results by entering:

{SUMMARY

Contact your Intel field service representative or the Intel product service center (refer to inside back cover) if the ICE-5100 emulator does not pass the confidence tests.

7. To exit from the confidence test software, enter:

{EXIT

1.5 Connecting the Emulator to a Target System

Perform the following steps to connect the ICE-5100 emulator to a target system.

NOTE

Intel recommends that you run the customer confidence tests described in Section 1.4 before using the ICE-5100 emulator for the first time.

1. Ensure that the power to the target system and the ICE-5100 emulator is OFF and you have connected the hardware components as described in Section 1.2.
2. Ensure that the target adaptor is connected to the processor module and is compatible with the target socket (e.g., 40-pin DIP target adaptor for use with 40-pin DIP target socket).

CAUTION

Improperly connecting the emulator to a target system can damage the emulator and the target system. Ensure the target adaptor is installed correctly (pin 1 of the target adaptor connected to pin 1 of the target socket) before applying power to the emulator.

3. Twist the user cable as needed to align pin 1 of the target adaptor to pin 1 of the target socket. Refer to Figure 1-8 for the proper pin orientation of the target adaptor with respect to the target socket. (Figure 1-8 shows a 40-pin target adaptor.)

Applying even pressure, push downward until the target adaptor is firmly seated in the target socket.

4. Turn the ICE-5100 emulator and target system power on. Observe the indicator LEDs on the controller pod. At power up, the green LED will flash on in approximately $\frac{1}{2}$ second. If it fails to come on, the control processor has discovered a hardware malfunction. (Refer to the inside back cover for service information.)

The red LED stays on while power is on.

1.6 Changing Target Adaptors

Perform the following steps to remove the target adaptor from the processor module.

1. Ensure that the power is OFF to the target system and the ICE-5100 emulator and that you have unplugged the processor module from your target system (or CPA board).
2. There are four slots (one in each corner) between the target adaptor and the iSBX connectors on the processor module (refer to Figure 1-9).

To remove the target adaptor, insert a small-blade screwdriver into one of these slots and turn gently. Repeat this process on the remaining three slots and remove the target adaptor.

3. To connect a different target adaptor to the processor module, align the connectors on the target adaptor with the iSBX connectors on the processor module (refer to Figure 1-4). Press the connectors firmly together until all four corners of the target adaptor are seated to the processor module.

1.7 Installing the Emulation Clips Assembly

Perform the following steps to install the emulation clips assembly.

1. Plug the clips probe terminator into the clips probe as shown in Figure 1-10, (A).
2. Plug the clips probe assembly cable into the connector on the controller pod as shown in Figure 1-10, (B).

Refer to Appendix C of the *ICE™-5100 Emulator Reference Manual*, order number 167257, for information on using the clips assembly.

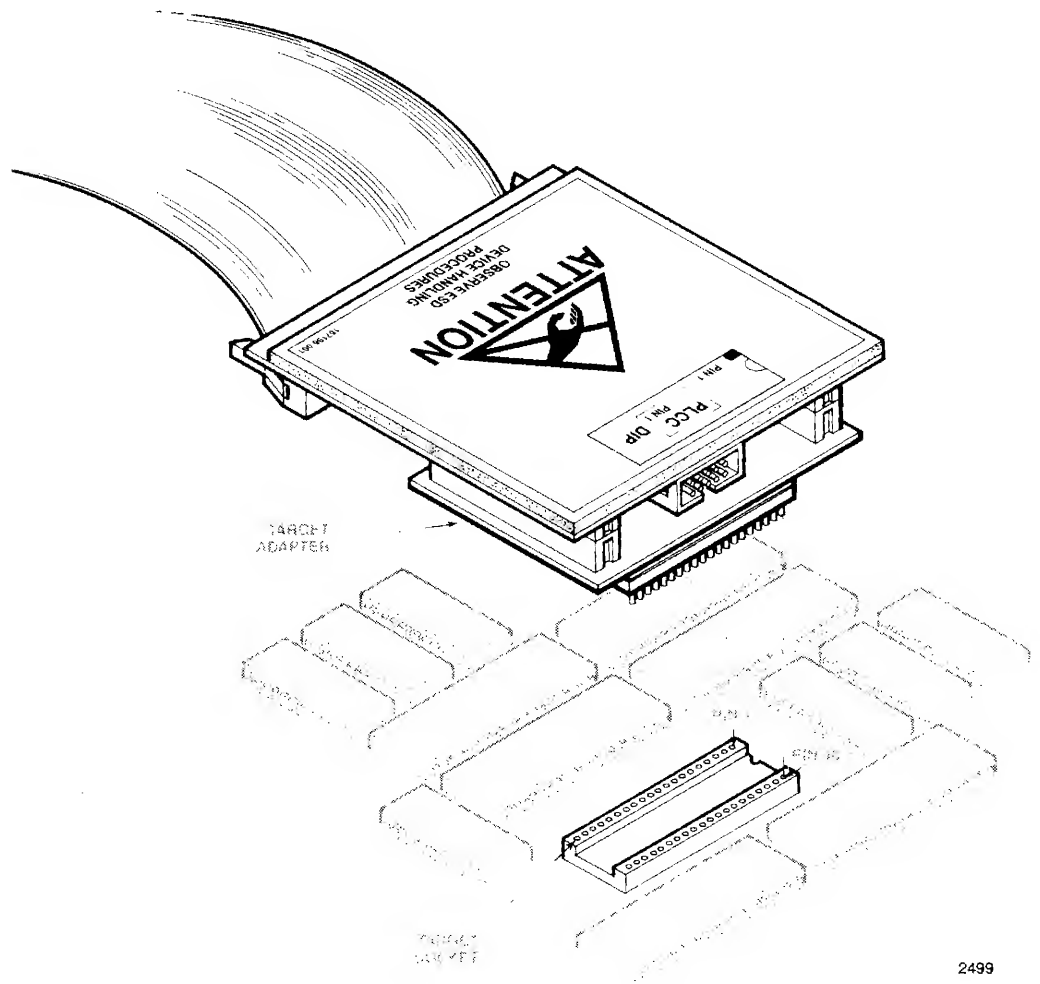


Figure 1-8 Orienting the Target Adaptor in a Target Socket

1.8 Connecting Test Equipment to the Emulator

As shown in Figure 1-11, there is a 10-pin connector mounted on the front end of the processor module. This connector enables you to use test equipment with the emulator. Table 1-1 shows the pin-out signals at the connector.

The signal $M1$ is true on the falling edge of $ALEE$ at the start of a new instruction. The signals $ALEE$ and $PSENE$ are always present and have similar timing to the ALE and $PSEN$ signals.

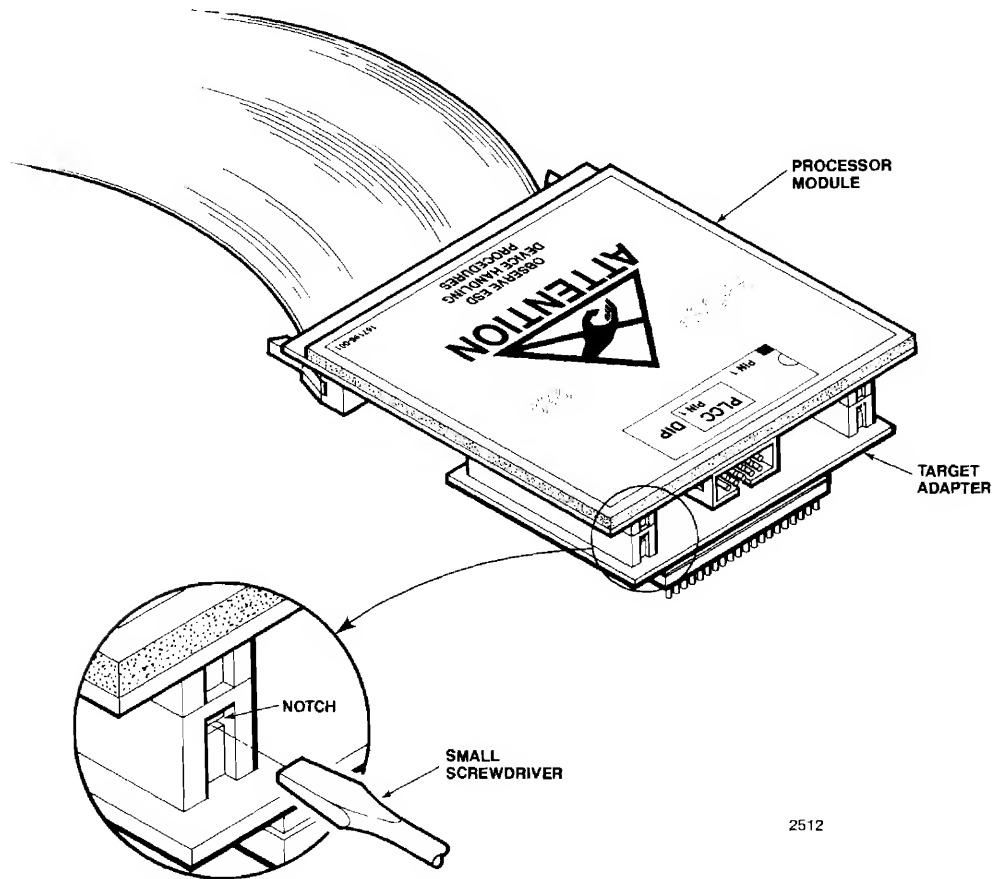
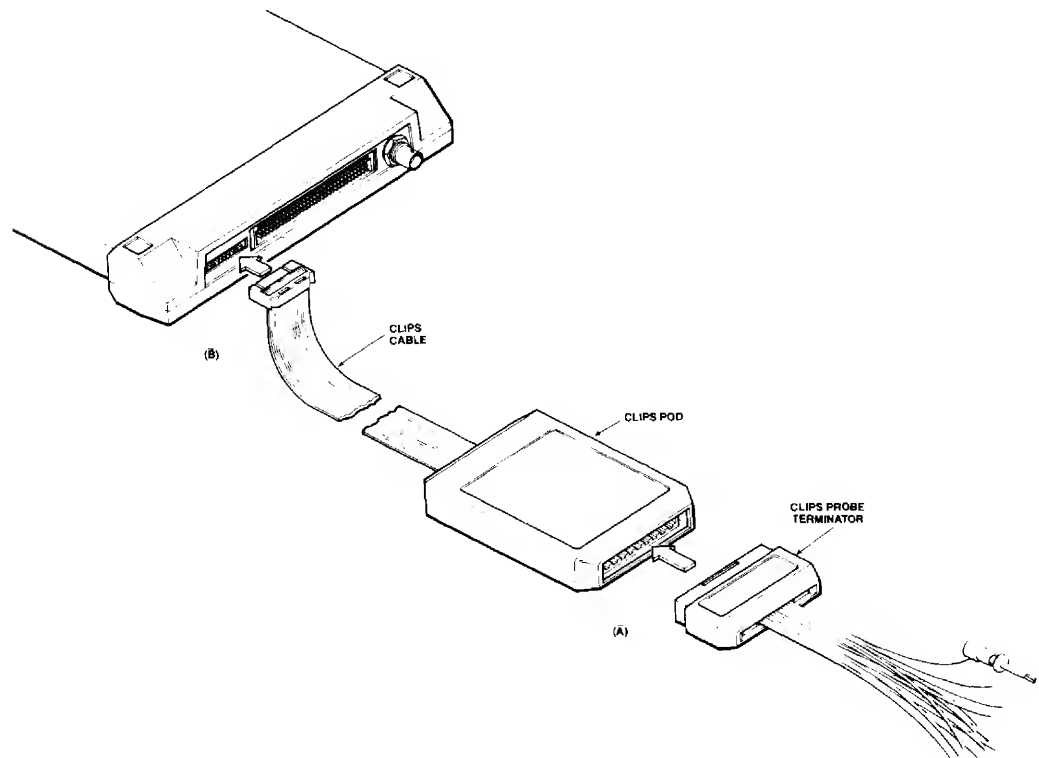


Figure 1-9 Removing the Target Adaptor from the Processor Module

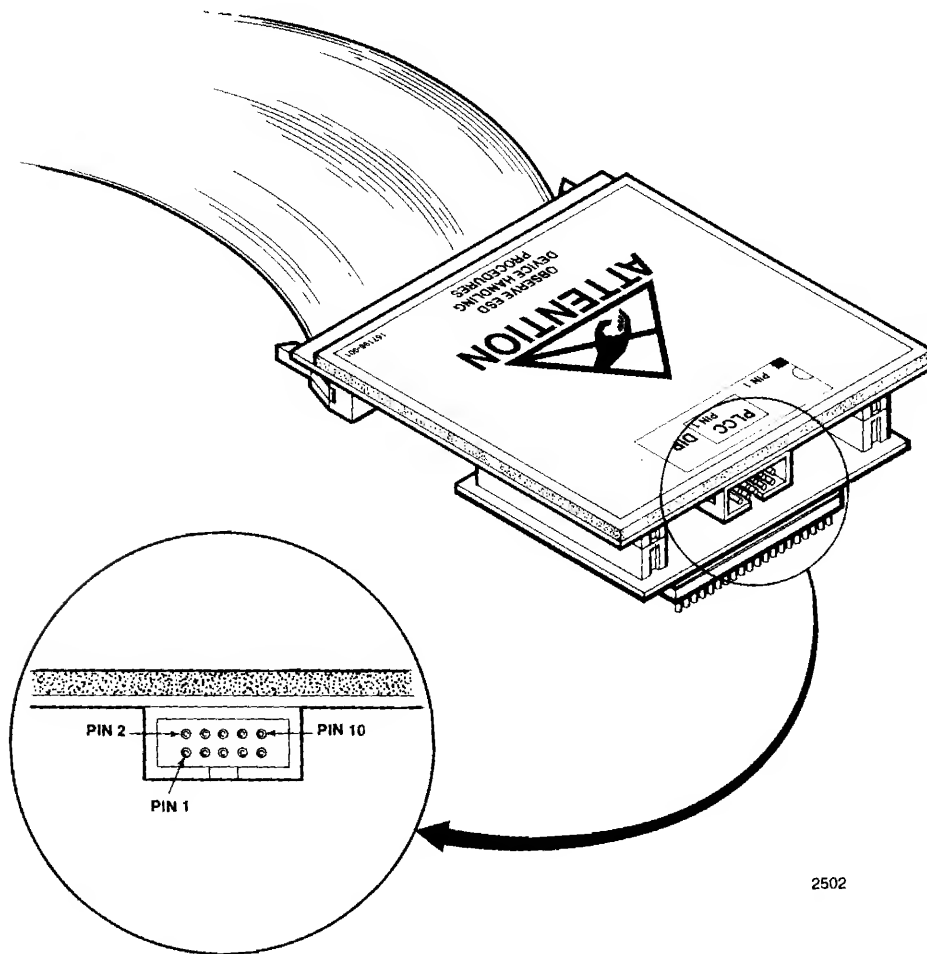
Table 1-1 Test Connector Pin-out Signals

Pin	Signal
1	NC
2	GND
3	$\overline{\text{PSENE}}$
4	GND
5	ALEE
6	GND
7	MI
8	GND
9	GND
10	GND



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Figure 1-10 Connecting the Emulation Clips Assembly



2502

Figure 1-11 Test Connector on the Processor Module

1.9 Changing the Protection Fuse

As shown in Figure 1-12, there is a 1A, 125V protection fuse in socket F1 on the underside of the processor module. Perform the following steps to remove and install a new fuse in the socket:

NOTE

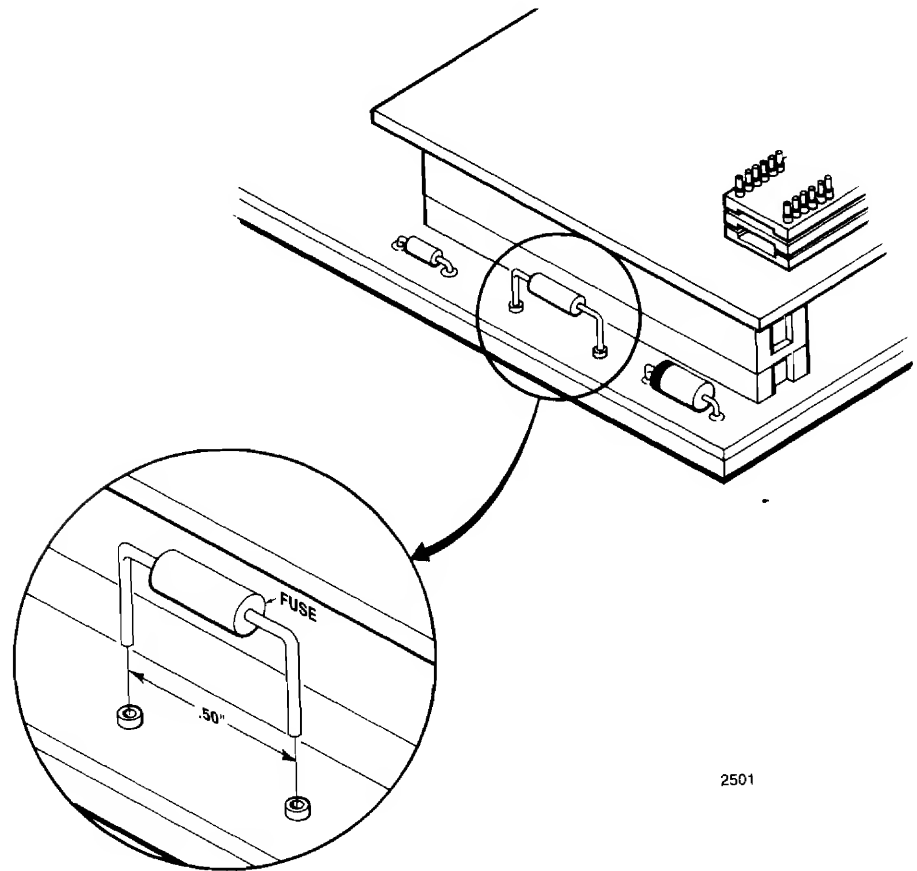
An extra fuse is supplied with your user probe assembly. If you need to order an extra fuse through Intel please include the following information:

part number: 102057

item: 1A, 125V fuse (.025" leads)

1. Remove the fuse by pulling up on the fuse with your fingertips or a pair of needle-nose pliers.
2. Bend the new fuse to fit in the socket and clip the leads on the fuse. Insert the fuse in socket F1.

-



2501

Figure 1-12 Fuse Location

2

IBM SOFTWARE INSTALLATION



2.1 Introduction

This chapter describes how to install and invoke the software on an IBM PC AT or PC XT. It is assumed you have completed the hardware installation procedures described in Chapter 1.

The chapter is divided into the following sections:

- Section 2.2 Creating a DOS CONFIG.SYS File
- Section 2.3 Copying the Emulator Software
- Section 2.4 Copying the Tutorial Software
- Section 2.5 Invoking the Software
- Section 2.6 Optional Software Installation Procedures

NOTE

You must use DOS version 3.0 or later, with the ICE-5100/*nnn* emulator software, or the emulator will not operate properly.

All of the examples in this chapter assume `PROMPT = PG` in your `AUTOEXEC.BAT` file.

Whenever you see `ICEnnn`, replace *nnn* with the number of your user probe. For example, if you have the ICE-5100/252 user probe, replace *nnn* with 252 as shown in the following software invocation command:

```
C:\ICEDIR>ICEnnn
```

Replace *nnn* as follows:

```
C:\ICEDIR>ICE252
```

The examples in this chapter assume directory names of `ICEDIR` and `TUTDIR`. When creating directories for the software, call them any name you wish.

The emulator software is comprised of the following files:

Host file	ICE nnn .EXE
Probe file	ICE nnn . <i>nnn</i>
Error file	ICE nnn .OVE
Help file	ICE nnn .OVH

The tutorial disk contains the tutorial software, a sample macro file, and a program to debug.

2.2 Creating a DOS CONFIG.SYS File

The CONFIG.SYS file is a configuration file that the DOS operating system reads when it boots the DOS operating system on the IBM hosts. This section explains how to create (update) a CONFIG.SYS file to include entries that makes it easier for you to use the ICE-5100 emulator with an IBM host.

Perform the following steps to create a CONFIG.SYS file.

NOTE

If you already have a CONFIG.SYS file in your DOS root directory, update the file to include the entries listed in step 1.

1. Using any text editor, create a file called CONFIG.SYS. Include the following entries in the file:

```
FILES = 20
BUFFERS = 20
```

Where:

FILES = 20 increases the number of files that can be open at one time to 20 (by default, DOS only allows eight).

BUFFERS = 20 extends the number of disk buffers that DOS uses to hold data as it is read from or written to the fixed disk. The default is two on a PC XT and three on a PC AT.

2. Update the file to include these editing changes.
3. Reboot the DOS operating system.

2.3 Copying the Emulator Software

Perform the following steps to copy the ICE-5100/*nnn* emulator software to a directory on the fixed disk.

1. **Create a directory.** Using DOS operating system commands, create a directory on the fixed disk of your PC system. Then change to that directory.

```
C:\>MKDIR ICEDIR
C:\>CD ICEDIR
```

2. **Copy the emulator software.** Insert the disk labeled ICE-5100/*nnn* (P/N 167125) in drive A and enter:

```
C:\ICEDIR>COPY A:*.*
```

3. **Compare files.** Use the DOS COMP command to ensure that the files were copied correctly. Enter:

```
C:\ICEDIR>COMP A:*.***.*
```

If the files are identical, DOS displays:

```
No EOF mark found  
Files compare ok
```

If there is an error, go to step 2 and start over.

4. **Save master copy of software.** Remove the master disk from drive A and store it in a safe place.

2.4 Copying the Tutorial Software

Perform the following steps to copy the tutorial software to a directory on the fixed disk.

NOTE

It is not necessary to copy the tutorial software to the fixed disk. The tutorial can be executed from a floppy disk drive. If you do not copy the tutorial to the fixed disk, make a back-up copy of the tutorial disk for safekeeping.

1. **Create a directory.** Using DOS operating system commands, create a directory on the fixed disk of your PC system. Then change to that directory.

```
C:\>MKDIR TUTDIR  
C:\>CD TUTDIR
```

2. **Copy the tutorial software.** Insert the disk labeled ICE-5100/*nnn* Tutorial (P/N 167725) in drive A and enter:

```
C:\TUTDIR>COPY A:*.*
```

3. **Compare files.** Use the DOS COMP command to ensure that the files were copied correctly. Enter:

```
C:\TUTDIR>COMP A:***.*
```

If the files are identical, DOS displays:

```
No EOF mark found  
Files compare ok
```

If there is an error, go to step 2 and start over.

4. **Save master copy of software.** Remove the master tutorial disk from drive A and store it in a safe place.

2.5 Invoking the Software

Perform the following steps to invoke the emulator and tutorial software.

NOTE

Examples assume you are invoking both the emulator and tutorial software. If you are not going to be using the tutorial, it is not necessary to change to the tutorial directory.

1. **Invoke the emulator software.** Change to the directory containing the ICE-5100 tutorial software and enter the following command:

```
C:\TUTDIR>ICE\ICEDIRICEDIRnnn
```

After approximately 10 seconds, the following message is displayed on the screen:

```
DOS 3.xx (033-I) ICE-5100/nnn Vx.y  
Copyright 1986 Intel Corporation
```

Approximately 5 seconds later, the input prompt (hlt>) appears on the screen. The emulator software is now loaded and ready for use.

NOTE

If power and clock are not present at the processor module when the software is invoked, the following error message is displayed:

```
ERROR 547 Probe or serial port is not responding.[*]
```

Turn on the power, and type RESET ICE to initialize the emulator.

If the emulator's power is on and power to the target system has not been turned on or the user cable is disconnected from the controller pod, the following error message is displayed:

```
ERROR 391 Processor module not responding.
```

Ensure that the user cable is connected, power is on, and type RESET ICE to initialize the emulator.

Refer to the software invocation command (ICE~~DIR~~nnn) entry in the *ICE™-5100 Emulator Reference Manual*, order number 166257, for more information on invoking the software and a list of invocation options.

2. **Invoke the tutorial software.** Enter the following command at the prompt (hlt>):

```
hlt>INCLUDE TUTOR NOLIST
```

To invoke the tutorial from a floppy disk drive, enter:

```
hlt>INCLUDE n:TUTOR NOLIST
```

Where:

n is the letter of the disk drive where the tutorial disk is located.

The following message appears on the screen:

```
*****
*
*          WELCOME TO THE ICE-5100 EMULATOR TUTORIAL
*
*
*****
```

The tutorial then displays configuration assumptions and information on how to call up the first tutorial screen. Refer to the *ICE™-5100 Emulator Tutorial Guide*, order number 167414, for additional information about the tutorial.

2.6 Optional Software Installation Procedures

The following sections describe how to create an ICE-5100/*nnn* configuration file and a DOS batch file. The configuration file can be used to store software invocation options. It is automatically opened and executed whenever you invoke the emulator software. The DOS batch file can be used to invoke predefined debug sessions.

2.6.1 Creating an ICE™-5100/*nnn* Configuration File

The following is an example of invocation options you can place in a configuration file:

```
MACRO (\\HYDIR\\MYFILE.MAC) VSTBUFFER (61) BAUD (19200)
```

Name the file ICE252.CFG and copy it to the *pathname* containing the file ICE252.EXE.

When you invoke the software, the host software searches for a configuration file in the *pathname* the emulator software was invoked from.

In the case of conflicting invocation options, any options you enter on the invocation line have precedence over those in a configuration file.

2.6.2 Creating a DOS Batch File to Execute Debugging Sessions

At times you may want to execute predefined debug sessions with your ICE-5100 emulator. They are easier to execute when invoked from a DOS batch file.

The following example invokes and executes a debug session and then returns control to the DOS operating system. In the example, the "<" is a DOS command symbol that redirects keyboard input to a file containing ICE-5100/*nnn* emulator commands.

NOTE

You cannot execute ICE-5100/*nnn* emulator commands from a DOS batch file. Use the DOS redirection symbol "<" to redirect command input to a file containing emulator commands.

You must specify the SUBMIT option when invoking the emulator software from within a DOS batch file.

DOS batch filename: ICE.bat

File contents:

```
\ICEDIR\ ICEnnn SUBMIT BAUD (19200) CHANNEL (2)
VSTBUFFER (21) < input.txt

REM Optional DOS commands
COPY test.log LPT1
DIR
CD \newdir
```

ICE-5100/*nnn* debug text filename: input.txt

File contents:

```
BASE = HEX
MAP ICE
LOAD messg
LIST test.log
GO TIL OUTSIDE PAGE 12
WAIT
REGS

/* Optional ICE-5100/nnn emulator commands */
EXIT /* EXIT ICE-5100/nnn software and return control to DOS */
```

NOTE

To ensure that control always returns to DOS when the ICE-5100 emulator is done executing commands, make EXIT the last ICE-5100 emulator command.

How to Invoke:

Invoke the batch file by entering the name of the .bat file. For the preceding example you would enter:

```
C:>ICE
```

3

SERIES IV SOFTWARE INSTALLATION



3.1 Introduction

This chapter describes how to install and invoke the ICE-5100/*nnn* emulator software on a Series IV. It is assumed you have completed the hardware installation procedures described in Chapter 1 and have configured your Series IV as described in Appendix B.

This chapter is divided into the following sections:

- Section 3.2 Copying the Emulator Software
- Section 3.3 Copying the Tutorial Software
- Section 3.4 Invoking the Software
- Section 3.5 Optional Software Installation Procedures

Wherever you see ICE*nnn*, replace *nnn* with the number of your user probe. For example, if you have the ICE-5100/252 user probe, replace *nnn* with 252 as shown in the following software invocation command:

```
>/WDD/ICEDIR/ICEnnn
```

Replace *nnn* as follows:

```
>/WDD/ICEDIR/ICE252
```

The examples in this chapter assume directory names of ICEDIR and TUTDIR. When creating directories for the software, call them any name you wish.

The emulator software is comprised of the following files:

Host object file	ICE <i>nnn</i> .86
Error file	ICE <i>nnn</i> .OVE
Help file	ICE <i>nnn</i> .OVH
Probe file	ICE <i>nnn</i> . <i>nnn</i>

The tutorial disk contains the tutorial software, a sample macro file, and a program to debug.

3.2 Copying the Emulator Software

Perform the following steps to copy the emulator software to a Series IV or network fixed disk.

1. **Create a directory.** Using iNDX operating system commands, create a directory on the Series IV or network fixed disk. The following example assumes a fixed disk called WD0.

```
>CREATEDIR /WD0/ICEDIR
```

2. **Copy the software.** Insert the disk labeled ICE-5100/*nnn* (P/N 167124) in a free floppy disk drive. Enter the following command to copy the software to the directory. (The name of the disk appears in the lower right hand corner of the screen.)

```
>COPY /disk volumename/*.* TO /WD0/ICEDIR
```

3. **Save the master disk.** Remove the master disk from the floppy drive and store it in a safe environment.

3.3 Copying the Tutorial Software

Perform the following steps to copy the tutorial software to a directory on the fixed disk.

NOTE

It is not necessary to copy the tutorial software to the fixed disk. The tutorial can be executed from a floppy disk drive. If you do not copy the tutorial to the fixed disk, make a back-up copy of the tutorial for safekeeping.

1. **Create a directory.** Create a directory on your Series IV or network fixed disk. The following example assumes a fixed disk called WD0.

```
>CREATE /WD0/TUTDIR
```

2. **Copy the tutorial software.** Insert the disk labeled ICE-5100/*nnn* Tutorial (P/N 167724) in a floppy disk drive and enter the following command (the name of the disk appears in the lower right hand corner of the screen):

```
>COPY /disk volumename/*.* TO /WD0/TUTDIR
```

3. **Assign logical device number to tutorial directory.** Assign a logical device number (:Fn:, where *n* is any number between 0 and 9) to the directory containing the tutorial. For example, to assign :F1: to the tutorial, enter:

```
>ASSIGN :F1: TO /WD0/TUTDIR
```

3.4 Invoking the Software

Perform the following steps to invoke the emulator and tutorial software.

1. **Assign a temporary work device.** You must assign a temporary work device to the directory containing the emulator software in order to edit trace information or load programs into ICE for debugging. Assign the work device by entering:

```
>ASSIGN :WORK: TO /WDD/ICEDIR
```

2. **Invoke the emulator software.** Invoke the ICE-5100/*nnn* emulator software by entering the following command:

```
>/WDD/ICEDIR/ICEnnn
```

In approximately 20 seconds the following message appears on the screen:

```
iNDX Vx.y ICE-5100/nnn Vx.y  
Copyright 1986 Intel Corporation
```

Approximately 5 seconds later the prompt (hlt>) appears on the screen. The software is now loaded and ready for use.

NOTE

If power and clock are not present at the processor module when the software is invoked, the following error message is displayed:

```
ERROR 547 Probe or serial port is not responding.[*]
```

Turn on the power, and type RESET ICE to initialize the emulator.

If the emulator's power is on and power to the target system has not been turned on or the user cable is disconnected from the controller pod, the following error message is displayed:

```
ERROR 391 Processor module not responding.
```

Ensure that the user cable is connected, power is on, and type RESET ICE to initialize the emulator.

4. **Invoke the tutorial software.** Enter the following command from the prompt (hlt>) to invoke the tutorial software from a directory on the fixed disk (example assumes :F1: was assigned to the directory containing the tutorial):

```
hlt>INCLUDE :F1:TUTOR NOLIST
```

To invoke the tutorial from a directory which is not assigned, enter:

```
hlt>INCLUDE pathnameTUTOR NOLIST
```

Where:

pathname specifies where the tutorial is located.

The following message appears on the screen:

```
*****
*
*      WELCOME TO THE ICE-5100 EMULATOR TUTORIAL      *
*
*****
```

The tutorial then displays configuration assumptions and information on how to call up the first tutorial screen. Refer to the *ICE™-5100 Emulator Tutorial Guide*, order number 167414, for additional information about the tutorial.

3.5 Optional Software Installation Procedures

The following sections describe how to create an ICE-5100/*nnn* configuration file and an ISIS submit file. The configuration file can be used to store software invocation options. The ISIS submit file can be used to execute predefined debug sessions.

3.5.1 Creating an ICE™-5100/*nnn* Configuration File

The following is an example of commands you can place in a configuration file:

```
MACRO (:F1:MYFILE.MAC) VSTBUFFER (61)
```

Name the file ICE252.CFG and copy it to the *pathname* that contains the ICE252.86 file.

When you invoke the software, the host software searches for a configuration file in the *pathname* the emulator software was invoked from.

In the case of conflicting invocation options, any options you enter on the invocation line have precedence over those in the configuration file.

3.5.2 Creating an ISIS SUBMIT File to Execute Debugging Sessions

At times you may want to execute predefined debug sessions. They are easier to run when executed from an ISIS.csd file. The following example invokes and executes a debug session and then returns control to the ISIS operating system. In the example, the file ICE.csd contains the commands needed to execute a debug session.

NOTE

You must specify the SUBMIT option when invoking the emulator software from an ISIS submit file.

ISIS.csd filename: ICE.csd

File contents:

```
ASSIGN :WORK: TO /WDD/ICEDIR
WDD/ICEDIR/ICEnnn BAUD (9600) CHANNEL (2) VSTBUFFER (64) SUBMIT
BASE = HEX
MAP ICE
LOAD messg
LIST test.log
GO TIL OUTSIDE PAGE 12
WAIT
REGS

/* Optional ICE-5100/nnn emulator commands */
EXIT /* EXIT ICE-5100/nnn software and return control to ISIS */
COPY test.log :LP:
[Optional ISIS commands]
```

NOTE

To ensure control is returned to the ISIS operating system after completion of the debugging session, make EXIT the last ICE-5100 emulator command in the file.

How to invoke:

Enter the ISIS SUBMIT command along with the name of your .csd file to execute the debugging session. For the preceding example, you would enter:

```
>SUBMIT ICE
```


4 SERIES III SOFTWARE INSTALLATION



4.1 Introduction

This chapter describes how to install and invoke the software on a Series III. It is assumed you have completed the hardware installation procedures described in Chapter 1 and have configured your Series III as described in Appendix C.

The following sections explain how to install and invoke the software on the different Series III configurations:

- Section 4.2 Software Installation for a Stand-alone Series III with Double-Density Disk Drives
- Section 4.3 Software Installation for a Networked Series III with Double-Density Disk Drives
- Section 4.4 Software Installation for a Networked Series III with Single-Density Disk Drives
- Section 4.5 Optional Software Installation Procedures

Wherever you see `ICE nnn` , replace nnn with the number of your user probe. For example, assuming you have the ICE-5100/252 user probe, replace nnn with 252 as shown in the following software invocation command:

```
-RUN :Fn:ICE $nnn$ 
```

Replace nnn as follows:

```
-RUN :Fn:ICE252
```

The examples in this chapter assume directory names of `ICEDIR` and `TUTDIR`. When creating directories for the software, call them any name you wish.

4.2 Software Installation for a Stand-alone Series III With Double-Density Disk Drives

This section describes the software installation for a Series III in stand-alone mode using double-density disk drives. It is divided as follows:

- Section 4.2.1 Copying the Emulator Software
- Section 4.2.2 Copying the Tutorial Software
- Section 4.2.3 Invoking the Software

The emulator software is comprised of the following files:

Host file	ICE nnn .86
Probe file	ICE nnn . nnn
Error file	ICE nnn .OVE
Help file	ICE nnn .OVH

The tutorial disk contains the tutorial software, a sample macro file, and a program to debug.

4.2.1 Copying the Emulator Software

Perform the following steps to copy the emulator software to an ISIS system disk containing the ISIS RUN and COPY utilities.

1. **Format an ISIS system disk.** Using ISIS operating system commands, format an ISIS system disk.
2. **Copy ISIS utility programs.** Copy the ISIS RUN and COPY utility programs to the disk formatted in Step 1.
3. **Copy emulator software.** Insert the disk labeled ICE-5100/ nnn (P/N 167123) in drive 1 and the newly formatted ISIS disk in drive 0 of the Series III system. Enter the following command to copy the software:

```
-COPY :F1:*. * TO :F0:
```

Remove the ISIS disk and label it as containing the emulator software and the RUN and COPY utilities.

4. **Save master copy of software.** Remove the master disk from drive 1 and store it in a safe place.

4.2.2 Copying the Tutorial Software

This section explains how to copy the tutorial software to a back-up disk.

1. **Format disk.** Using ISIS commands, format a disk (do not format as an ISIS system disk).
2. **Copy tutorial software.** Using ISIS commands, copy the contents of the disk labeled ICE-5100/ nnn Tutorial (P/N 167723) to the disk you formatted in Step 1. Enter:

```
-COPY :F $n$ :*. * TO :F $n$ :*. *
```

Where:

n is the number of the drives where the disks are located.

NOTE

If your Series III has only two disk drives, you will have to copy the files using the P(ause) option. For example, assuming you have an ISIS system disk with the COPY utility in drive 0, enter the following command:

```
-COPY :F1:*. * TO :F1:*. * P
```

Follow the instructions as they appear on the screen. When the screen prompts you to enter the source disk, insert the master tutorial disk in drive 1 and press <RETURN>. When you are prompted to insert the output disk, replace the master with the new disk and press <RETURN>. You will have to swap the disks several times to complete the file transfer.

Label the new disk to indicate it contains the tutorial software.

3. **Save master copy of tutorial.** Remove the master tutorial disk from the disk drive and store it in a safe place.

4.2.3 Invoking the Software

Perform the following steps to invoke the emulator and tutorial software.

1. **Invoke the emulator software.** Insert the ISIS system disk containing the emulator software in drive 0 of the Series III system. Enter the following command to invoke the ICE-5100/nnn emulator software:

```
-RUN ICEnnn
```

In approximately 60 seconds the following message appears on the screen:

```
SERIES III ICE-5100/nnn Vx.y  
Copyright 1986 Intel Corporation
```

Approximately 20 seconds later the prompt (hlt>) appears on the screen. The software is now loaded and ready for use.

NOTE

If power and clock are not present at the processor module when the software is invoked, the following error message is displayed:

```
ERROR 547 Probe or serial port is not responding.[*]
```

Turn on the power, and type RESET ICE to initialize the emulator.

If the emulator's power is on and power to the target system has not been turned on or the user cable is disconnected from the controller pod, the following error message is displayed:

```
ERROR 391 Processor module not responding.
```

Ensure that the user cable is connected, power is on, and type RESET ICE to initialize the emulator.

2. **Invoke the tutorial software.** Invoke the tutorial software by entering the following command at the prompt (hlt>):

```
hlt>INCLUDE :Fn:TUTOR.NOLIST
```

Where:

n is the number of the disk drive where the tutorial is located.

3. **Copy the emulator software.** Insert the disk labeled ICE-5100/*nnn* (P/N 167723) in drive 1 of the Series III system. Copy the software to the network with the following command:

```
-COPY :F1:*. * TO :F2:
```
4. **Save the master software disk.** Remove the master from drive 1 and store in a safe place.

4.3.2 Copying the Tutorial Software

Perform the following steps to copy the tutorial software to a fixed disk on the network.

1. **Create tutorial directory.** Create a directory to hold the tutorial software. Enter:

```
-CREATE /WDD/TUTDIR
```
2. **Assign logical device number to tutorial directory.** Assign :Fn: (where *n* is any number from 0 to 9) to the directory. For example, to assign :F3:, enter:

```
-ASSIGN :F3: TO /WDD/TUTDIR
```
3. **Copy tutorial software.** Place the master tutorial disk in drive 1 and enter:

```
-COPY :F1:*. * TO :F3:
```
4. **Save master copy of tutorial software.** Remove the master from drive 1 and store it in a safe place.

4.3.3 Invoking the Software

Perform the following steps to invoke the emulator and tutorial software from a fixed disk on the network.

1. **Invoke the emulator software.** Invoke the ICE-5100/*nnn* emulator software by entering: (example assumes :F2: is assigned to the directory containing the software):

```
-RUN :F2:ICEnnn
```

In approximately 40 seconds the following message appears on the screen:

```
SERIES III ICE-5100/nnn Vx.y  
Copyright 1986 Intel Corporation
```

Approximately 15 seconds later the prompt (hlt>) appears on the screen. The software is now loaded and ready for use.

NOTE

If power and clock are not present at the processor module when the software is invoked, the following error message is displayed:

```
ERROR 547 Probe or serial port is not responding.[*]
```

Turn on the power, and type RESET ICE to initialize the emulator.

If the emulator's power is on and power to the target system has not been turned on or the user cable is disconnected from the controller pod, the following error message is displayed:

```
ERROR 391 Processor module not responding.
```

Ensure that the user cable is connected, power is on, and type RESET ICE to initialize the emulator.

2. **Invoke the tutorial software.** Enter the following command from the prompt (hlt>) to invoke the tutorial (example assumes :F3: was assigned to the directory containing the tutorial):

```
hlt>INCLUDE :F3: TUTOR NOLIST
```

The following message appears on the screen:

```
*****
*
*      WELCOME TO THE ICE-5100 EMULATOR TUTORIAL      *
*
*****
```

The tutorial then displays configuration assumptions and information on how to call up the first tutorial screen. Refer to the *ICE™-5100 Emulator Tutorial Guide*, order number 167414, for additional information about the tutorial.

4.4 Software Installation for a Networked Series III With Single-Density Disk Drives

This section explains how to copy the software on a networked Series III with single-density disk drives. It is divided as follows:

- Section 4.4.1 Copying the Emulator Software
- Section 4.4.2 Copying the Tutorial Software
- Section 4.4.3 Invoking the Software

The software for a Series III with single-density disk drives comes on three disks; two disks containing the emulator software and one disk containing the tutorial software. The emulator software is comprised of the following files:

Host file	ICE nnn .1 and ICE nnn .2
Probe file	ICE nnn . nnn
Error file	ICE nnn .OVE
Help file	ICE nnn .OVH

The tutorial disk contains the tutorial software, a sample macro file, and a program to debug.

4.4.1 Copying the Emulator Software

Perform the following steps to copy the emulator software to a fixed disk on the network.

1. **Create a directory on the network.** Turn on the Series III system and boot the ISIS operating system; then log onto the network. Create a directory to hold the emulator software. The following example assumes a fixed disk called WD0.

~~-CREATE /WD0/ICEDIR~~

2. **Assign logical device number to network directory.** Assign :F1: to physical drive 1 on the Series III system. Assign :F2: to the directory you created on the network. Enter:

~~-ASSIGN :F1: TO 1~~

~~-ASSIGN :F2: TO /WD0/ICEDIR~~

3. **Copy emulator software.** Insert the disk labeled ICE-5100/nnn #1 (P/N 167121) in drive 0. Enter the following command:

~~-COPY :F1:ICE~~nnn~~.1 TO :F2:~~

Remove the disk after ICE~~nnn~~.1 has been copied. Insert the disk labeled ICE-5100/nnn #2 (P/N 167122) in drive 0. Enter the following command:

~~-COPY :F1:ICE~~nnn~~.2 TO :F2:~~

4. **Concatenate the files.** Enter the following command to concatenate the files ICE~~nnn~~.1 and ICE~~nnn~~.2:

~~-COPY :F2:ICE~~nnn~~.1, :F2:ICE~~nnn~~.2 TO :F2:ICE~~nnn~~.86~~

After concatenating the files, enter the following command to delete the source files:

~~-DELETE :F2:ICE~~nnn~~.1, :F2:ICE~~nnn~~.2~~

Copy the remaining files from the disk labeled ICE-5100/nnn #2 (P/N 167122) to :F2: as follows:

~~-COPY :F1:ICE~~nnn~~.0VE, :F1:ICE~~nnn~~.0VH, :F1:ICE~~nnn~~.~~nnn~~ TO :F2:~~

5. **Save the master copies.** Store the master software disks in a safe environment.

4.4.2 Copying the Tutorial Software

Perform the following steps to copy the tutorial software to a fixed disk on the network.

1. **Create a tutorial directory.** Create a directory to hold the tutorial software. Enter:

~~-CREATE /WD0/TUTDIR~~

2. **Assign logical device number to tutorial directory.** Assign :Fn: (where *n* is any number from 0 to 9) to the directory. For example, to assign :F3:, enter:

```
-ASSIGN :F3: TO /WDD/TUTDIR
```

3. **Copy the tutorial software.** Place the disk labeled ICE-5100/nnn Tutorial (P/N 167722) in disk drive 0 and enter:

```
-COPY :FD0:*.* TO :F3:
```

4. **Save master copy of software.** Remove the master from drive 1 and store it in a safe place.

4.4.3 Invoking the Software

Perform the following steps to invoke the emulator and tutorial software from a fixed disk on the network.

1. **Invoke the emulator software.** Invoke the ICE-5100/nnn emulator software by entering the following command (example assumes :F2: is assigned to the directory containing the emulator software):

```
-RUN :F2:ICE/nnn
```

In approximately 40 seconds the following message appears on the screen:

```
SERIES III ICE-5100/nnn Vx.y  
Copyright 1986 Intel Corporation
```

Approximately 15 seconds later the prompt (hlt>) appears on the screen. The software is now loaded and ready for use.

NOTE

If power and clock are not present at the processor module when the software is invoked, the following error message is displayed:

```
ERROR 547 Probe or serial port is not responding.[*]
```

Turn on the power, and type RESET ICE to initialize the emulator.

If the emulator's power is on and power to the target system has not been turned on or the user cable is disconnected from the controller pod, the following error message is displayed:

```
ERROR 391 Processor module not responding.
```

Ensure that the user cable is connected, power is on, and type RESET ICE to initialize the emulator.

2. **Invoke the tutorial.** Enter the following command from the prompt (hlt>) to invoke the tutorial (replace *n* in :Fn: with the logical device number you assigned to the directory containing the tutorial):

```
hlt>INCLUDE :Fn:TUTOR.NOLIST
```

The following message appears on the screen:

```
*****
*
*          WELCOME TO THE ICE-5100 TUTORIAL      *
*
*****
```

The tutorial then displays configuration assumptions and information on how to call up the first tutorial screen. Refer to the *ICE™-5100 Emulator Tutorial Guide*, order number 167414, for additional information about the tutorial.

4.5 Optional Software Installation Procedures

The following sections describe how to create an ICE-5100/*nnn* configuration file and an ISIS submit file. The configuration file can be used to store software invocation options. The ISIS submit file can be used to execute predefined debug sessions.

4.5.1 Creating an ICE™-5100/*nnn* Configuration File

The following is an example of invocation options you can place in a configuration file:

```
MACRO (:F1:MYFILE.MAC) VSTBUFFER (L1)
```

Name the file ICE252.CFG and copy it to the *pathname* containing the ICE252.86 file.

When you invoke the software, the host software searches for a configuration file in the *pathname* that the emulator software was invoked from.

In the case of conflicting invocation options, any options you enter on the invocation line have precedence over those in the configuration file.

4.5.2 Creating an ISIS SUBMIT File to Execute Debugging Sessions

At times you may want to execute predefined debug sessions. They are easier to run when executed from an ISIS.csd file. The following example invokes and executes a debug session and then returns control to the ISIS operating system.

NOTE

You must specify the SUBMIT option when invoking the emulator software from within an ISIS submit file.

ISIS.csd filename: ICE.csd

File contents:

```
RUN :Fn:ICEnnn BAUD (9600) CHANNEL (2) VSTBUFFER (21) SUBMIT  
BASE = HEX  
MAP ICE  
LOAD messg  
LIST test.log  
GO TIL OUTSIDE PAGE 12  
WAIT  
REGS  
  
/* Optional ICE-5100/nnn emulator commands */  
EXIT /* EXIT ICE-5100/nnn software and return control to ISIS */  
COPY test.log :LP:  
[Optional ISIS commands]
```

NOTE

To ensure that control is returned to the ISIS operating system after completion of the debugging session, make EXIT the last ICE-5100 emulator command.

How to invoke:

Enter the ISIS SUBMIT command along with the name of your .csd file to execute the debugging session. For the preceding example, enter:

```
>SUBMIT ICE
```

A

IBM HOST CONSIDERATIONS



This appendix describes host-specific topics and commands to keep in mind while using the ICE-5100 emulator with an IBM PC AT or PC XT computer system.

A.1 IBM Host Requirements

Intel recommends that your PC AT or PC XT have:

- a fixed disk.
- 512 KB of contiguous memory.
- a 5¹/₄ inch, double-density floppy disk drive.
- the DOS operating system, version 3.0 or later.

A.2 Selecting a Non-default Baud Rate

The software invocation command contains an option for selecting the baud rate. Values for the baud rate are 300, 1200, 9600, and 19200. The default baud rate is 9600 for the IBM systems.

To use a baud rate other than the default, specify the desired baud rate in the software invocation command or in an ICE-5100 emulator configuration file (see section 2.6.1). For example, to invoke the software at 19200 baud, enter:

```
C:\ICEDIR>ICEEmu BAUD (19200)
```

Intel recommends that you attempt to use the emulator at 19200 baud. If you experience serial interface problems, reboot at 9600 baud.

A.3 Selecting a Non-default Serial Channel

The software invocation command contains an option for selecting the serial channel (1 or 2). The software assumes the emulator is connected to serial channel 1. If you have connected the emulator to channel 2, you must specify channel 2 when invoking the software. For example:

```
C:\ICEDIR>ICEEmu CHANNEL (2)
```

A.4 Aborting ICE™-5100 Emulator Commands

Use <CNTL><BREAK> to break out of command execution. To activate this control sequence, press the <CNTL> and <BREAK> keys simultaneously.

A.5 Controlling the Screen Display

Use the ICE-5100 emulator paging commands F(ast), P(age), and L(ine) to control the display of information to the screen. Enter these commands while the information is being scrolled to the screen.

Abort the display by typing <CNTL><BREAK>. Alternately, you can use <CNTL><NUMLOCK> to stop the display of data to the screen; use any other key to resume the display.

A.6 Using Memory-resident Utility Programs

Intel cannot guarantee the ICE-5100 emulator to function properly when memory-resident utility programs are used concurrently with the emulator software.

If you experience unusual probe interface error messages or abnormal situations which are unrecoverable using <CNTL><BREAK>, remove any memory-resident utilities from your AUTOEXEC.BAT file.

B

SERIES IV HOST CONSIDERATIONS



Appendix B describes how to configure your Series IV as a host for the ICE-5100 emulator.

B.1 Series IV Host Requirements

Intel recommends that your Series IV have:

- a fixed disk.
- a floppy disk drive.
- 512 KB (or more) of contiguous memory.

B.2 Selecting a Non-default Baud Rate

The software invocation command contains an option for selecting the baud rate. Valid baud rates are 300, 1200, 9600, and 19200. The default baud rate for the Series IV is 19200.

To use a baud rate other than the default, specify the desired baud rate during the software invocation command or in an ICE-5100/*nnn* configuration file (see Section 3.5.1). For example, to invoke the ICE-5100/*nnn* emulator software at 9600 baud, enter:

```
WDD/ICE/DIR/ICEnnn BAUD (9600)
```

B.3 Selecting the Serial Channel

The software invocation command contains an option for selecting the serial channel (1 or 2). However, your serial cable and emulator software is configured for use with serial channel 2 on the Series IV. NOTE: the ICE-5100/*nnn* emulator software recognizes channel 1 as the Series IV serial channel 2.

B.4 Aborting ICE™-5100/*nnn* Emulator Commands

Press <CNTL>C to break out of ICE-5100/*nnn* command execution. To activate this control sequence, press the <CNTL> and C keys simultaneously.

B.5 Controlling the Screen Display

Use the paging commands F(ast), P(age), and L(ine) to control the display of information to the Series IV terminal screen. Enter these commands while the information is scrolling to the screen. Abort the display by typing <CNTL>C.

B.6 Configuring the Series IV

Before using the Series IV as a host for the ICE-5100 emulator, you need to check the configuration of the Series IV. There are two important areas to be considered:

- Verify that the IEU (ISIS Execution Unit) board is configured for serial I/O and set its starting memory address to avoid memory mapping conflicts. This board is also referred to as the SEU (Slave Execution Unit) board.
- Ensure that at least 512 KB of contiguous user memory is available.

The following sections explain how to perform these operations.

Section B.7	Removing the Series IV Top Cover
Section B.8	Installing Memory Boards in the Series IV
Section B.9	Configuring the IEU Board
Section B.10	Replacing the Series IV Top Cover

B.7 Removing the Series IV Top Cover

The IEU board and memory boards are inaccessible from the board access door. You will have to remove the top cover from the Series IV chassis to install and jumper these boards. Perform the following steps to remove the cover.

1. Ensure that the power to the Series IV is OFF and disconnect the AC plug from the power outlet.

WARNING

While handling the cover or working inside the system chassis, use extreme care not to strike the CRT neck or base. Striking the CRT neck or base could cause the CRT to implode and may cause injury or death, and damage in the immediate area.

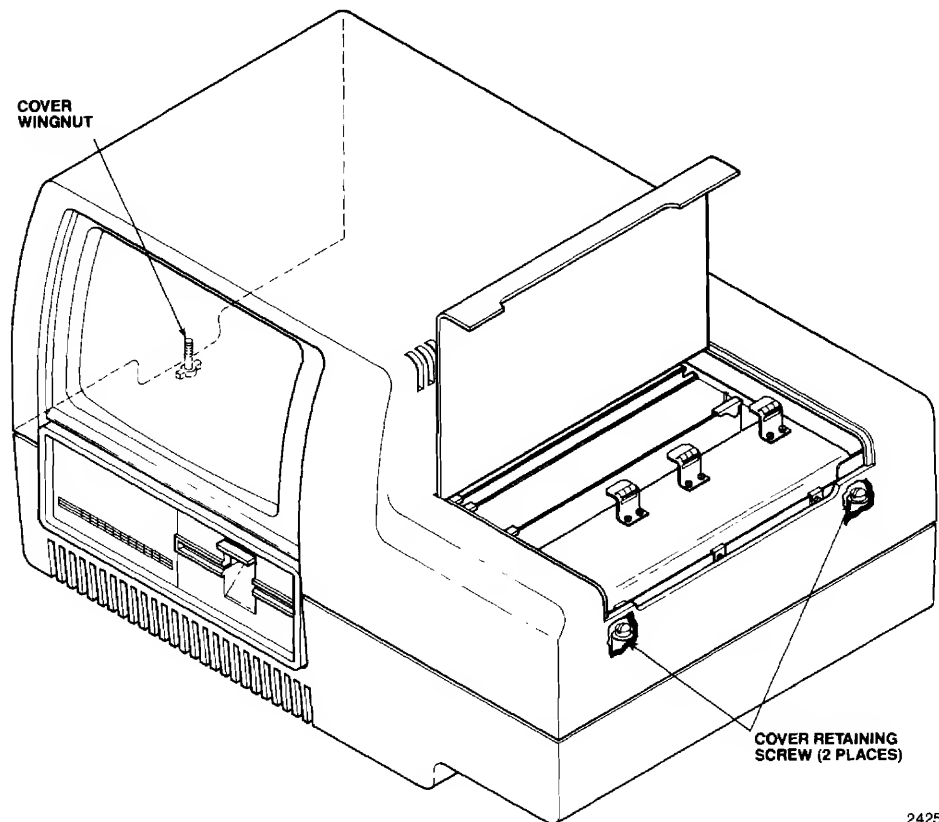
2. Loosen the cover-retaining thumbscrew and the two cover-retaining screws as shown in Figure B-1. (These screws remain captive in the chassis.)
3. Close the board access door and lift the cover straight up until it clears the card cage and CRT. Set the cover aside.

B.8 Installing Memory Boards in the Series IV

Your Series IV must contain 512 KB of contiguous RAM in order to support the operation of the ICE-5100 emulator.

Figure B-2 shows the Series IV memory addressing schemes currently available. There are four configurations available that support the ICE-5100 emulator as shown in columns 3, 4, 5, and 6 of Figure B-2. If your Series IV configuration is in column 1 or 2, you will have to upgrade it before you can use it with the ICE-5100 emulator.

Your Series IV is either a model iMDX-43X or iMDX-44X (refer to Figure B-2). Models without an SPU (slave processor unit) board have the 43X model number; models with the SPU installed have the 44X model number.



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Figure B-1 The Series IV Top Cover Retaining Screws

If you are not sure if your Series IV has an SPU board, look at the display on the screen when booting the operating system. The diagnostics display will state if there is an SPU board installed.

The following sections describe how to configure the Series IV system to support the ICE-5100 emulator.

Section B.8.1 Installing Memory Boards in a Series IV Model iMDX-43X

Section B.8.2 Installing Memory Boards in a Series IV Model iMDX-44X

B.8.1 Installing Memory Boards in a Series IV Model iMDX-43X

A Series IV (model iMDX-43X), as shown in Figure B-2, column 1, requires additional memory to support the ICE-5100 emulator. It is recommended that you use an iSBC® 012B memory board to match the memory scheme shown in Figure B-2, column 6.

A general rule for configuring memory for the model 43X is to begin adding memory at address 192K (030000H) and end at 896K-1 (0DFFFFH). Set the IEU board's starting address at 896K (0E0000H).

Perform the following steps to install additional memory.

1. Remove the iSBC 056 memory board from the Series IV.
2. Ensure that the starting address of the iSBC 056 memory board is set to 192K (030000H). The jumpers settings are shown in Figure B-3; their locations are shown in Figure B-4.

A jumper installed is equal to a logical 1; a jumper removed is equal to a logical 0.

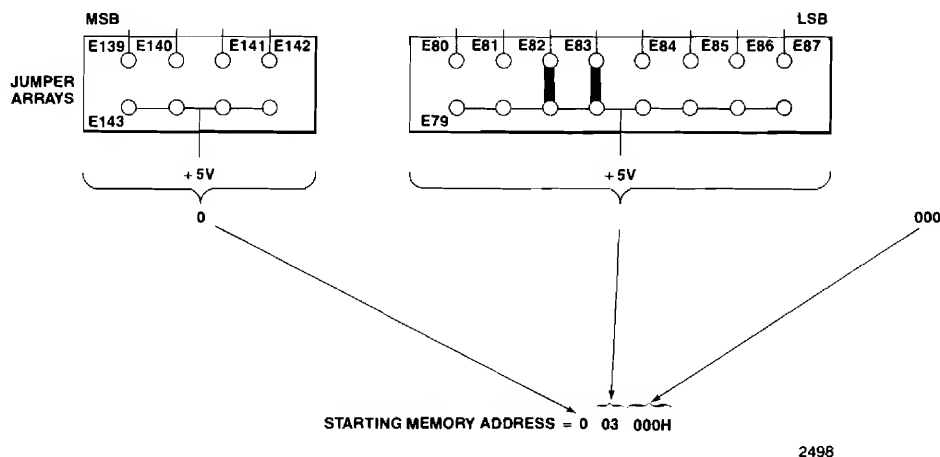


Figure B-3 The iSBC® 056 Board's Jumper Settings (Series IV Model 43X)

3. Install the iSBC 056 memory board in the Series IV card cage.
4. On the iSBC 012B memory board, set the interrupt jumpers as follows (OUT indicates to remove the jumpers). The jumper locations are shown in Figure B-5.

Interrupt Jumper Settings

W35 OUT	W39 OUT
W36 OUT	W40 OUT
W37 OUT	W41 OUT
W38 OUT	W42 OUT

5. Set the starting address jumpers to 448K (070000H) on the iSBC 012B memory board. The jumper settings are shown in Table B-1; their locations are shown in Figure B-5.

Table B-1 iSBC® 012B Starting Address Jumpers (Series IV Model 43X)

Start Address	AD15-AD0E Bit Pattern	Jumper Number and Bit Mnemonic							
		W32 AD15	W31 AD14	W30 AD13	W29 AD12	W28 AD11	W27 AD10	W26 AD0F	W25 AD0E
070000H	00 0111 00				—	—	—		

| indicates a jumper installed (logical 0)
 — indicates a jumper removed (logical 1)

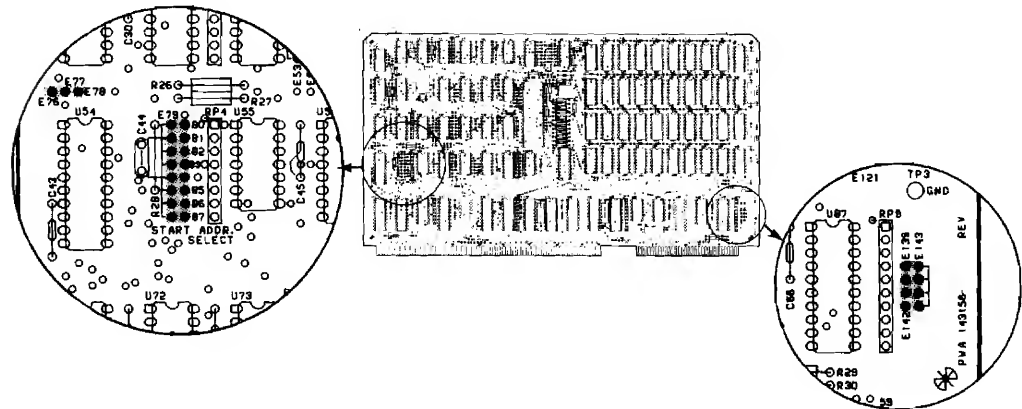


Figure B-4 Jumper Locations on the iSBC® 056 Memory Board

6. Although the iSBC 012B memory board contains 512K bytes of memory, it must be strapped short by 64K bytes. Set the jumpers that define the ending address to 896K-1 (0DFFFFH). The jumpers are listed in Table B-2; their locations are shown in Figure B-5.

Table B-2 iSBC® 012B Ending Address Settings (Series IV Model 43X)

End Address	AD15-AD0E Bit Pattern	Jumper Number and Bit Mnemonic							
		W24 AD15	W23 AD14	W22 AD13	W21 AD12	W20 AD11	W19 AD10	W18 AD0F	W17 AD0E
0DFFFFH	00 1101 11			—	—		—	—	—

| indicates a jumper installed (logical 0)

— indicates a jumper removed (logical 1)

7. Install the iSBC 012B memory board in the Series IV.

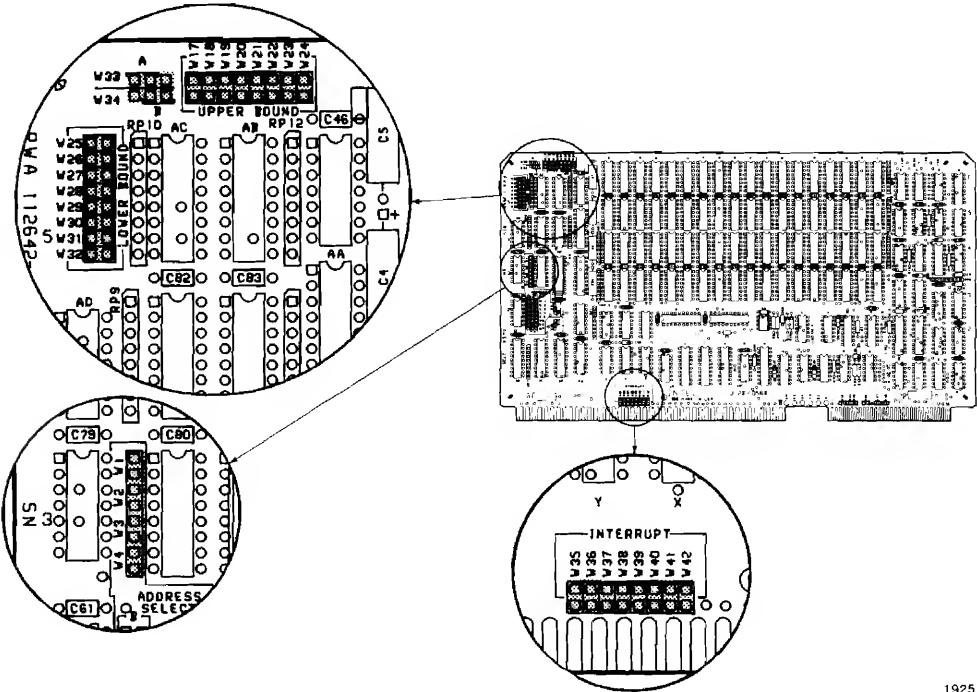


Figure B-5 Jumper Locations on the iSBC® 012B Memory Board

This completes the installation of iSBC memory boards in the Series IV model 43X. Turn to Section B.9 to learn how to configure the IEU board for serial communication and set its starting memory address.

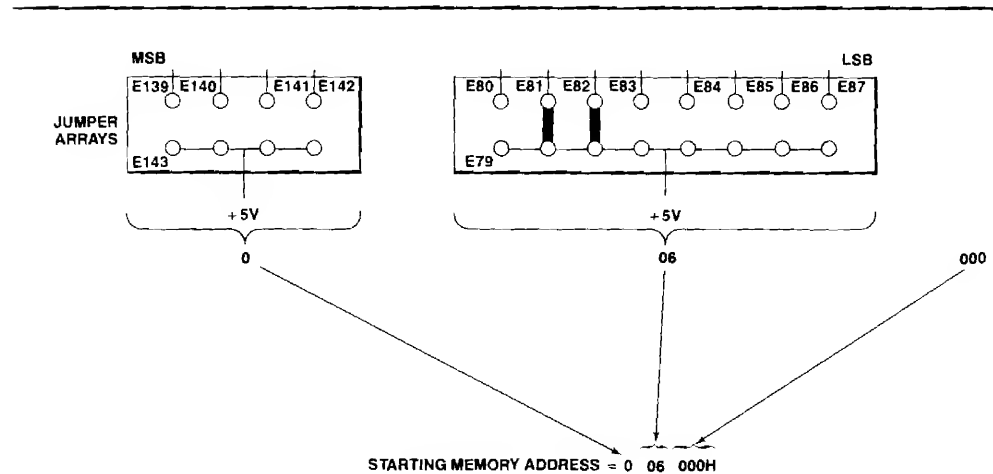
B.8.2 Installing Memory Boards in a Series IV Model IMDX-44X

A Series IV (model 44X), as shown in Figure B-2, column 2, requires additional memory to support the ICE-5100 emulator. It is recommended that you add an iSBC 056 memory board to match the memory scheme shown in Figure B-2, column 3.

A general rule for configuring the memory for the model-44X is to begin adding memory at address 384K (060000H) and fill up memory to 896K-1 (0DFFFFH). The IEU board's starting memory address starts at 896K (0E0000H).

Perform the following steps to configure the iSBC 056 memory boards.

1. Remove the iSBC 056 memory board installed in your Series IV.
2. Ensure that the starting address is set to 384K (060000H) on the iSBC 056 board as shown in Figure B-6. The jumper locations are shown in Figure B-7.
3. Install the iSBC 056 memory board in the Series IV card cage.
4. Set the starting address jumpers to 640K (0A0000H) on the second iSBC 056 board. The jumpers are shown in Figure B-8; their locations are shown in Figure B-7.
5. Insert the second iSBC 056 memory board in the Series IV card cage.



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Figure B-6 First iSBC® 056 Board Jumper Settings (Series IV Model 44X)

B.9 Configuring the IEU Board

The IEU (also called the SEU board) board must be jumpered correctly to support serial communication and to avoid memory mapping conflicts.

The IEU board is installed in card slot 2. Perform the following steps to verify the jumper settings on the IEU board.

1. Remove the board hold-down bracket by removing the single screw holding it in place (refer to Figure B-9).
2. Remove the IEU board from slot 2 of the Series IV system. Slot 1 is the left-most slot when you face the front of the Series IV.

NOTE

Some Series IV systems may have the IEU board installed in slot 3. If your IEU board is in slot 3, you must move it to slot 2 or it cannot be used for serial communication the ICE-5100 emulator.

There is an exception to this recommendation: If your IEU board is in slot 3 and the IEU board has a cable connected to jack J1 on the top of the board, you do not have to move the IEU board to slot 2. If you do have this IEU board configuration, note which serial channel connector J1 attaches at the back of the Series IV. Connect the serial cable from the ICE-5100 emulator to this serial connector.

3. Ensure that the IEU board is jumpered for serial I/O as specified in Table B-3; the jumper locations are shown in Figure B-10.

Table B-3 IEU Board Jumper Configurations

Jumper Connection	Call-out Location	Signal Name
E11-E13	1	Timer Output
E16-E17	5	USART CCK
E22-E23	3	TXC
E25-E26	3	RXC
E28-E29	3	Req To Send
E31-E33	2	Sel USART
E40-*	4	RXD
E41-*	4	TXD

*PBA 124743-001 (also labelled 124744-001)

E40-E42

E41-E43

PBA 124743-002 or greater

(also labelled 124744-003 or greater)

E40-E43

E41-E42

} Wire-Wrap
Connections

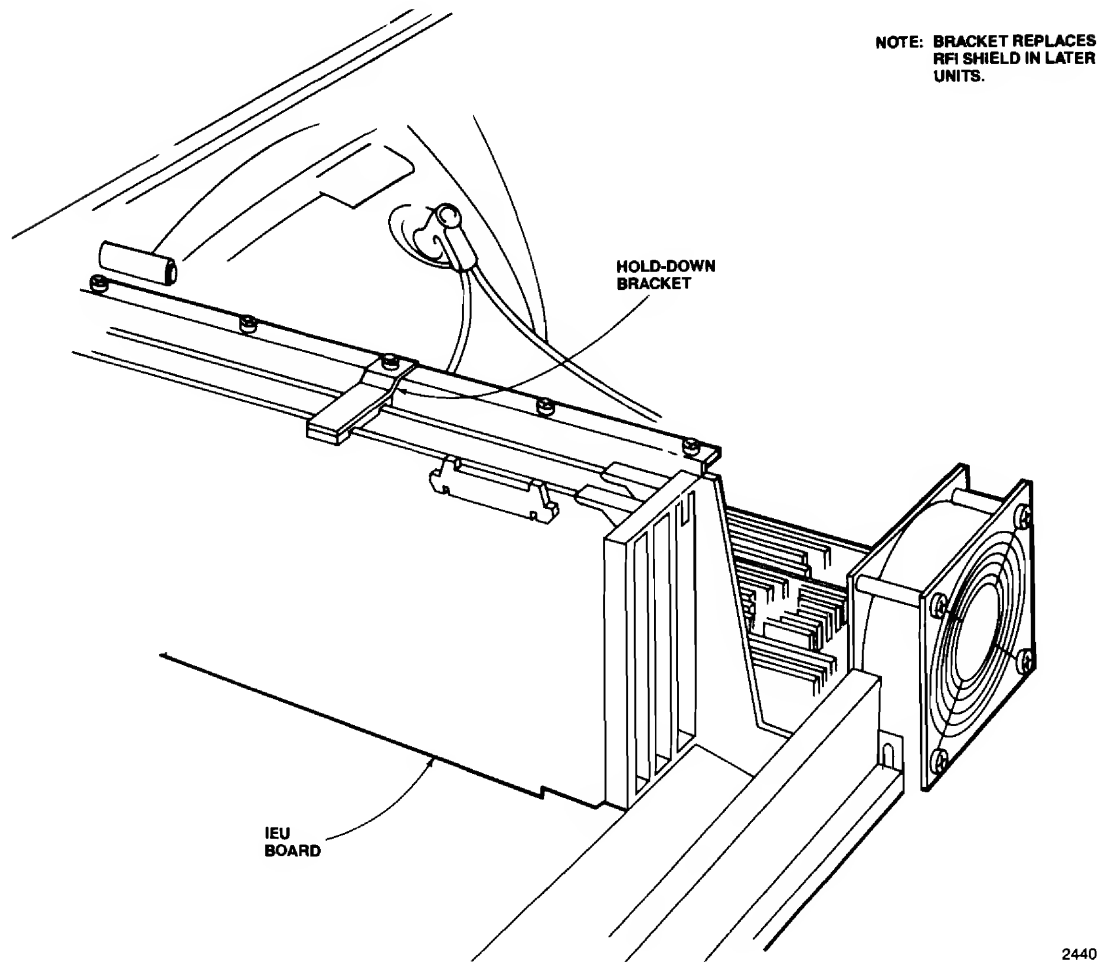


Figure B-9 Removal of the Hold-Down Bracket

4. Jumper the IEU memory starting address at 0E0000H. Set the memory jumpers as follows:

Memory Jumper	Jumper Setting
(See Location 6 in Figure B-10)	
E53-E54	IN
E55-E56	OUT
E57-E58	OUT
E59-E60	OUT

5. Replace the IEU board in slot 2 of the Series IV.
6. Reinstall the board hold-down bracket. Use care not to strike the CRT neck or base.

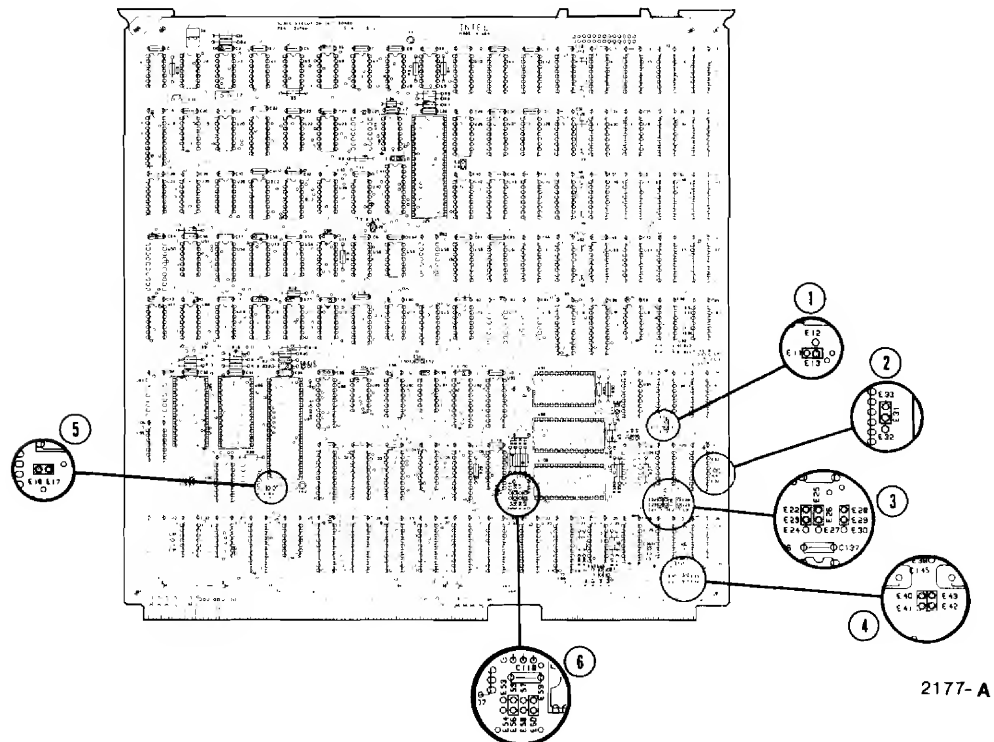


Figure B-10 Series IV, IEU Board Jumper Locations

B.10 Replacing the Series IV Top Cover

Perform the following steps to replace the top cover to the Series IV.

WARNING

While handling the cover or working inside the system chassis, use extreme care not to strike the CRT neck or base. Striking the CRT neck or base can cause the CRT to implode and may cause injury or death, and damage in the immediate area.

1. Lower the top cover back on to the Series IV chassis.
2. Tighten the cover-retaining thumbscrew and the cover-retaining screws.
3. Plug the AC power cord into a power outlet.
4. Apply power to the Series IV system and verify that its operation has not been affected during configuration.



SERIES III HOST CONSIDERATIONS



C.1 Series III Host Requirements

This appendix describes how to configure your Series III as a host for the ICE-5100 emulator.

Intel recommends that your Series III have:

- two or more double-density floppy disk drives.
- 512 KB of contiguous memory.
- an integrated processor card (IPC) installed. Do not use a Series III that has an integrated processor board (IPB), because the IPB does not support serial communication with the ICE-5100 emulator.

C.2 Selecting a Non-default Baud Rate

The software invocation command contains an option for selecting the baud rate. Valid baud rates are 300, 1200, 9600, and 19200. The default baud rate for the Series III is 19200.

To use baud rate other than the default, specify the baud rate in the software invocation command or in an ICE-5100/*nnn* configuration file (see Section 4.5.1). For example, to invoke the ICE-5100/*nnn* emulator software at 9600 baud, enter:

```
-RUN :device ICEnnn BAUD (9600)
```

C.3 Selecting a Non-default Serial Channel

The software invocation command contains an option for selecting the serial channel (1 or 2). The serial cable and software shipped with your ICE-5100 emulator is configured for use with serial channel 1. Do not connect the emulator to serial channel 2.

C.4 Aborting ICE™-5100/*nnn* Emulator Commands

Use <CNTRL>C to break out of command execution. To activate this control sequence, press the <CNTRL> and C keys simultaneously.

C.5 Avoiding the ISIS DEBUG-86 Monitor

<CNTL>D invokes the ISIS DEBUG-86 debug monitor on the Series III. If you accidentally invoke DEBUG-86, type G <RETURN> to exit from the monitor and return to the ICE-5100 emulation environment.

If you press <CNTL>D from within the screen editor, you may have to abort the edit session. Type Q(uit) followed by A(bort).

C.6 Controlling Screen Display

Use the paging commands F(ast), P(age), and L(ine) to control the display of information to the Series IV terminal screen. Enter these commands while the information is scrolling to the screen. Abort the display by typing <CNTL>C.

Alternately, use <CNTL>S to stop the display of information to the screen; enter <CNTL>Q to resume the display.

C.7 Configuring the Series III

The Series III requires 512 KB of contiguous memory to support the ICE-5100 emulator.

If your Series III has an RPB-86 board installed, you have 64 KB of on-board memory residing at address 0 to 0FFFFH. You must provide additional memory starting at address 010000H.

If you have a Series III with an RPC-86 board installed, you have 256 KB of on-board memory residing at address 0 to 3FFFFH. You must provide additional memory starting at address 040000H.

It is recommended that you provide the additional memory with an iSBC 012B (512 KB) memory board. The required iSBC 012B board jumper settings differ for use with the RPB-86 and RPC-86 boards.

The following sections describe how to install the iSBC 012B memory board in conjunction with the RPB-86 and RPC-86 boards.

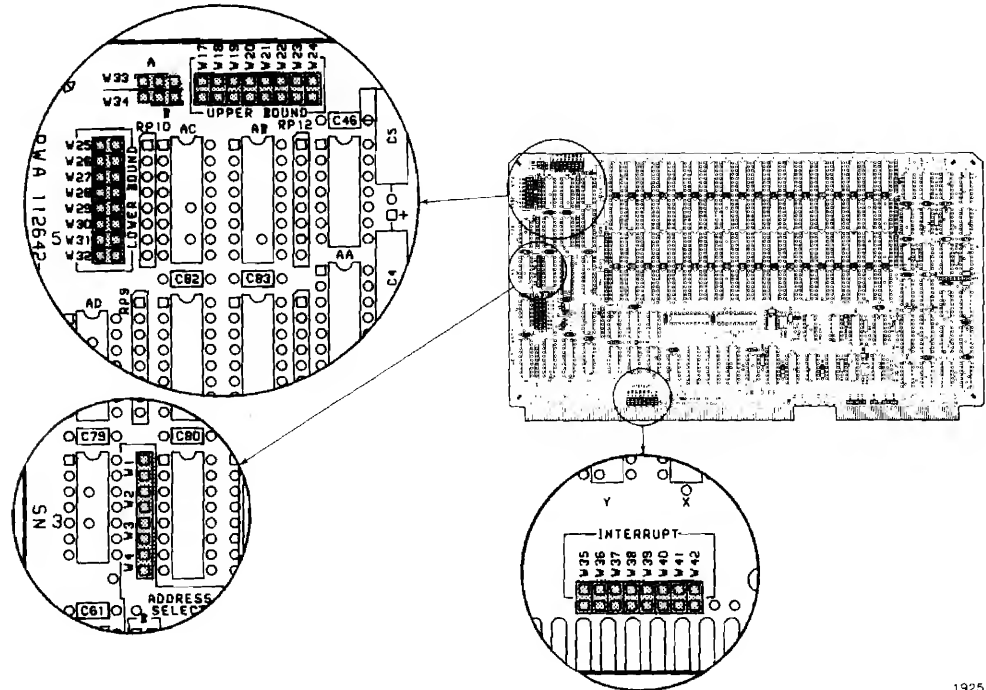
C.7.1 Installing an iSBC® 012B Memory Board in Association With an RPB-86 Board

Perform the following steps to configure and install an iSBC 012B memory board in a Series III system containing a RPB-86 processor board.

1. Ensure that the Series III power is off.
2. If the iSBC 012B memory board is already installed, remove the memory board from the card cage. Set the interrupt jumpers as follows (OUT indicates the jumper is removed). The jumper locations are shown in Figure C-1.

Interrupt Jumper Settings

W35 OUT	W39 OUT
W36 OUT	W40 OUT
W37 OUT	W41 OUT
W38 OUT	W42 OUT



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Figure C-1 Jumper Locations on the iSBC® 012B Memory Board

3. Set the jumpers that define the starting address to 010000H on the iSBC 012B memory board. The jumper settings are shown in Table C-1; their locations are shown in Figure C-1.

Table C-1 iSBC® 012B Starting Address Settings (Series III with an RPB-86 Board)

Start Address	AD15-AD0E Bit Pattern	Jumper Number and Bit Mnemonic							
		W32 AD15	W31 AD14	W30 AD13	W29 AD12	W28 AD11	W27 AD10	W26 AD0F	W25 AD0E
010000H	00 0001 00						—		

| indicates a jumper installed (logical 0)
 — indicates a jumper removed (logical 1)

4. Set the jumpers that define the ending address value to 8FFFFFH on the iSBC 012B memory board. The jumpers are shown in Table C-2; their locations are shown in Figure C-1.

Table C-2 iSBC® 012B Ending Address Settings (Series III with an RPB-86 Board)

End Address	AD15-AD0E Bit Pattern	Jumper Number and Bit Mnemonic							
		W24 AD15	W23 AD14	W22 AD13	W21 AD12	W20 AD11	W19 AD10	W18 AD0F	W17 AD0E
08FFFFH	00 1000 11			—				—	—

| indicates a jumper installed (logical 0)
 — indicates a jumper removed (logical 1)

5. Install the iSBC 012B memory board in the Series III. Note: You may install the board in any available card slot.
6. Verify that the Series III has an integrated processor card (IPC) and not an integrated processor board (IPB) installed. To check for the card, remove the top board from the Series III (the one with switches 0 through 7 and the Reset button). Look on the board for the 40-pin microprocessor: the IPC board has an 8085 and the IPB has an 8080.

NOTE

If your Series III has the IPB board installed (8080 microprocessor), you will have to upgrade your system to include the IPC (8085 microprocessor) board. Refer to the installation instructions that accompany the IPC board.

C.3.2 Installing an iSBC® 012B Memory Board in Association With an RPC-86 Board

Perform the following steps to configure and install an iSBC 012B memory board in a Series III that contains an RPC-86 board:

1. Ensure that the Series III power is off.
2. If the iSBC 012B memory board is already installed, remove the memory board from the card cage. Set the interrupt jumpers as follows (OUT indicates the jumper is removed). The jumper locations are shown in Figure C-1.

Interrupt Jumper Settings

W35 OUT	W39 OUT
W36 OUT	W40 OUT
W37 OUT	W41 OUT
W38 OUT	W42 OUT

3. Set the jumpers that define the lower address value to 040000H on the iSBC 012B board. The jumper settings are shown in Table C-3; their locations are shown in Figure C-1.

Table C-3 iSBC® 012B Starting Address Settings (Series III with an RPC-86 Board)

Start Address	AD15-AD0E Bit Pattern	Jumper Number and Bit Mnemonic							
		W32 AD15	W31 AD14	W30 AD13	W29 AD12	W28 AD11	W27 AD10	W26 AD0F	W25 AD0E
040000H	00 0100 00				—				

| indicates a jumper installed (logical 0)
 — indicates a jumper removed (logical 1)

4. Set the jumpers that define the ending address value to 0BFFFFH on the iSBC 012B memory board. The jumpers are shown in Table C-4; their locations are shown in Figure C-1.

Table C-4 iSBC® 012B Ending Address Settings (Series III with an RPC-86 Board)

End Address	AD15-AD0E Bit Pattern	Jumper Number and Bit Mnemonic							
		W24 AD15	W23 AD14	W22 AD13	W21 AD12	W20 AD11	W19 AD10	W18 AD0F	W17 AD0E
0BFFFFH	00 1011 11			—		—	—	—	—

| indicates a jumper installed (logical 0)
 — indicates a jumper removed (logical 1)

5. Install the iSBC 012B memory board in the Series III. Note: you may install the board in any available card slot.
6. Verify that the Series III has an integrated processor card (IPC) and not an integrated processor board (IPB) installed. To check for the card, remove the top board from the Series III (the one with switches 0 through 7 and the reset button). Look on the board for the 40-pin microprocessor: the IPC board has an 8085 and the IPB has an 8080.

NOTE

If your Series III has the IPB board installed (8080 microprocessor), you will have to upgrade your system to include the IPC (8085 microprocessor) board. Refer to the installation instructions that accompany the IPC board.

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